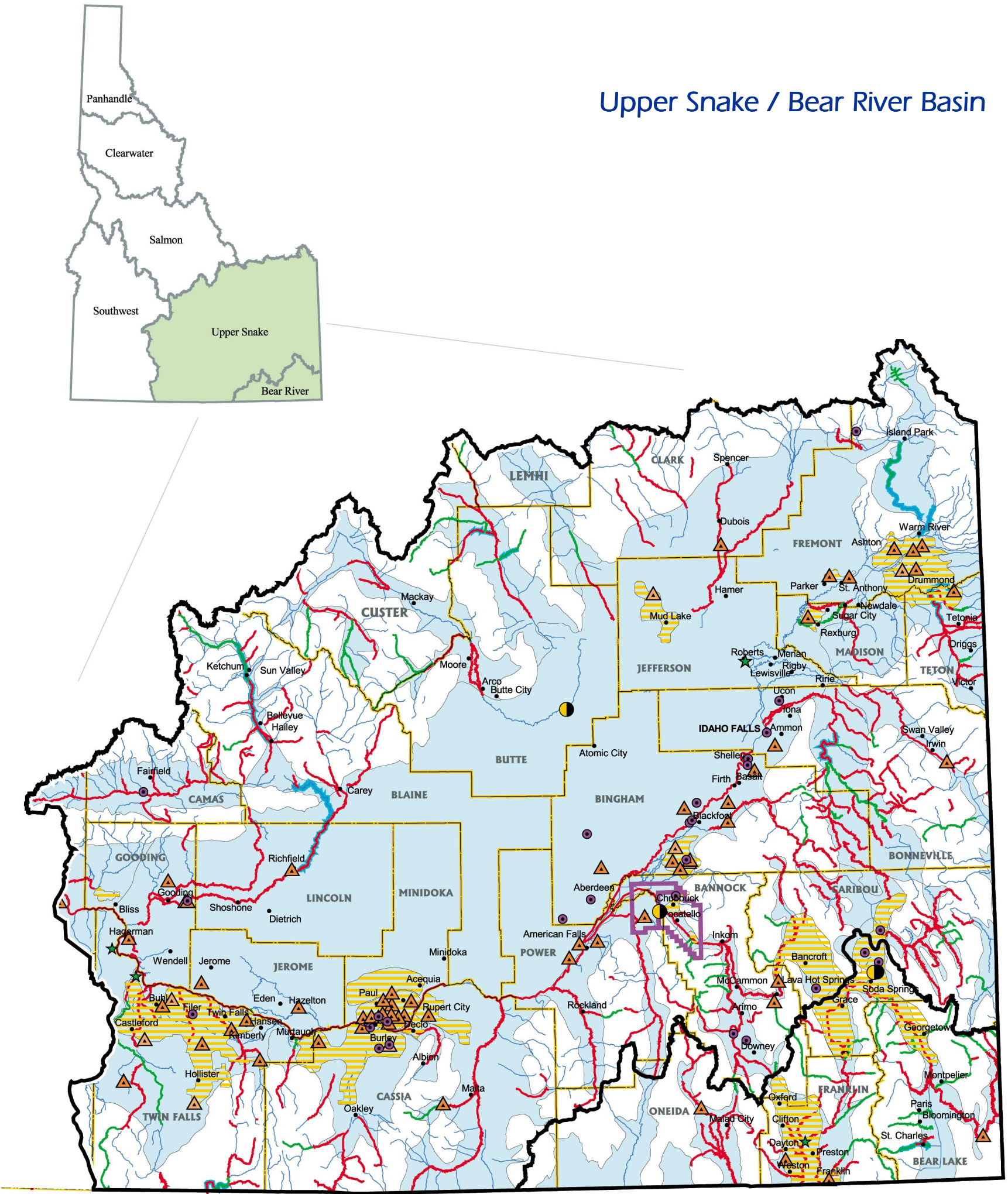


# Upper Snake / Bear River Basin

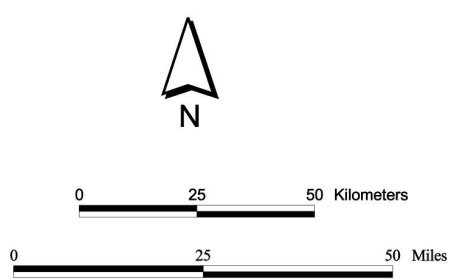


*Map Legend*

**Group 1 Sites**

- ★ Inorganic Compounds (Arsenic, Fluoride)  
Exceeds Groundwater Quality or Health Standard
- Organic Compounds (Pesticides, VOCs)  
Exceeds Groundwater Quality or Health Standard
- ▲ Nitrate exceeding drinking water standards (10 mg/l)
- Superfund Sites

- Air Quality Non-attainment Areas
- Streams
- Streams Determined to Meet Water Quality Standards
- Surface Water Quality Impaired Streams-1998
- Minimum Stream Flows
- Aquifers
- Counties
- Nitrate Priority Areas  
more than 25% of samples exceed 5 mg/l





# Upper Snake and Bear River

The Upper Snake Basin borders the great Continental Divide to the north and east. The upper basin is characterized by mountainous terrain and flat to gently sloping plains, changing to semi-desert in the plateau lands. The numerous mountain ranges drain to the Snake River and the Snake River Plain Aquifer, one of the largest aquifers in the United States. This is one of the most productive agricultural areas in the country, producing sugar beets, corn, potatoes, and dry beans. The Magic Valley has a large number of dairy farms and related cheese and whey processing facilities, and over 100 fish hatcheries, which produce 70 percent of the commercially produced hatchery trout in the U.S. The area also contains the Idaho National Engineering and Environmental Laboratory (INEEL), an 890-square mile federal research facility.

The southeast and eastern portions of the State are known for phosphate mining and processing, fishing at Bear Lake, Island Park, Henry’s Fork, hot springs, and agriculture production. Three large water-supply reservoirs dominate the edge of the Snake River Plain: the American Falls Reservoir on the upper Snake River; the Palisades Reservoir on the Snake River at the Idaho/Wyoming border; and the Blackfoot Reservoir in the upper Blackfoot River. The Bear River system is unique in that it begins in Utah, travels through Wyoming and Idaho, and ends in Utah in the Great Salt Lake. Bear Lake is distinctive for its robin-egg blue color, derived from the calcium carbonate content (limestone) in the lake.

## Air Quality

The Upper Snake River Air Quality Control Region covers an area east of Mountain Home all the way to Wyoming. This area has, in its eastern corner, Idaho’s heaviest industrial area in the Portneuf Valley Airshed. This critical airshed has very significant issues with particulate matter, including secondary aerosols (sulfates and nitrates). State and federal health-based particulate matter standards have been exceeded at several monitoring sites in the Portneuf Valley Airshed during the past decade. Agricultural and wild lands dominate the rest of this large air quality control region. There are significant particulate matter sources from industrial facilities in Twin Falls, Pocatello, and at the INEEL. Odors from agricultural and food industries cause significant complaints along the mid-Snake River in the Twin Falls airshed. Across the rural areas of this air quality control region, wildfires and prescribed fires for agricultural and wildland management can and do cause significant particulate matter pollution. The air quality graph below shows the highest and second highest maximum daily readings of particulate matter from annual monitoring.

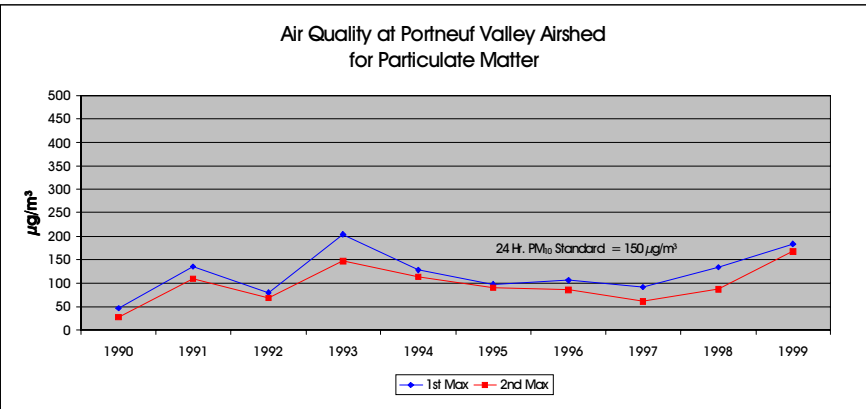
Upper Snake River Air Quality Control Region  
Portneuf Valley Airshed — Pollutants of Concern

◆ Particulate Matter

◆ Sulfur Dioxide

◆ Ozone

◆ Hazardous Air Pollutants/  
Toxic Air Pollutants



## Surface Water

The water quality concerns of the upper and middle portions of the Snake River include high nutrient levels, temperature, and a lack of dissolved oxygen. (See the “Phosphorus Loadings” graph at right.) Both the Portneuf River and Bear River systems are adversely affected by sediment, phosphorous, or nitrogen problems. There are approximately 58,385 miles of streams and rivers in the Upper Snake and Bear River Basins. 3,457 stream miles have been assessed for water quality. Of those, the basin currently has 2,930 miles which do not meet water quality standards. The pie charts show the percentage of streams meeting water quality standards, the percentage of those not meeting the standards, and the percentage of streams where no specific determination has been made.

Surface Water Pollutants of Concern  
Upper Snake/Bear River Basins

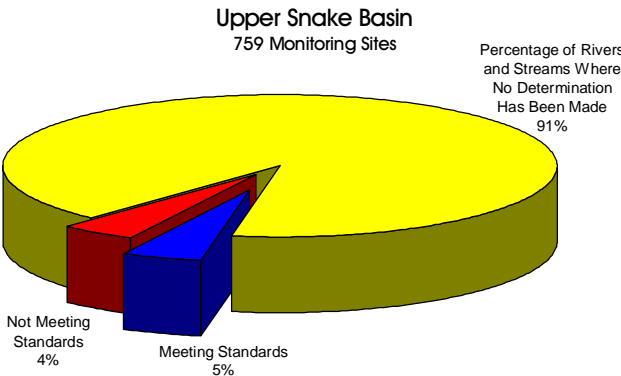
◆ Sediments

◆ Nutrients

◆ Temperature

◆ Bacteria

◆ Selenium



## Ground Water

The Upper Snake and Bear River Basins contain sixteen Nitrate Priority Areas and dozens of Group 1 Sites (see “Definition of Impacted Ground Water Areas and Sites” on page 4). The Group 1 Sites consist of nitrate, inorganic compounds, and organic compounds. The INEEL contains Group 1 Sites consisting of radionuclides, organic and inorganic compounds. (See “Upper Snake and Bear River” map for locations.)

## Significant Areas of Contamination

The INEEL consists of several large facilities which contribute contaminants to, and take water from the Snake River Aquifer. Ground water contamination from past activities persists; however, in the last ten years, contamination to the aquifer under the INEEL has been reduced. Contaminants found in ground water from the INEEL include hexavalent chromium, iodine-29, strontium-90, tritium, carbon tetrachloride, and trichloroethylene. Contaminants found in the soil include heavy metals such as lead and mercury, volatile organic compounds, and radioactive materials.

Ground water beneath industrial phosphate processing sites near Soda Springs is contaminated with cadmium, selenium, vanadium, fluoride, molybdenum, tributyl phosphate, and manganese. Studies have shown that the public drinking water supplies in the area are currently not affected by the contaminated ground water.

Ground water studies conducted down-gradient of the phosphorous plants northwest of Pocatello have shown that levels of arsenic, lead, and cadmium in the ground water exceed the federal Drinking Water Standards. Off-site soil contaminants include radium-226, zinc, cadmium, fluoride, and total phosphorous. On-site soil contamination includes cadmium, chromium, copper, vanadium, radium-226, lead, and nickel.

Ground Water Pollutants of Concern  
Upper Snake/Bear River Basins

◆ Volatile Organic Compounds

- Perchloroethylene
- Trichloroethylene
- Gasoline

◆ Organics

- Pesticides

◆ Inorganics

- Fluoride
- Selenium

◆ Nitrates

INEEL Pollutants of Concern

◆ Volatile Organic Compounds

- Trichloroethylene
- Carbon Tetrachloride

◆ Radionuclides

◆ Nitrates

◆ Inorganics

- Mercury
- Lead
- Cadmium
- Arsenic
- Chloride
- Selenium
- Chromium
- Vanadium
- Manganese
- Molybdenum
- Tributyl Phosphate
- Fluoride

